

(5) Mr. Dale's tables have been compiled with the view of meeting the requirements of workers in physical science and applied mathematics, and exclude such functions as are of use only in navigation. They comprise tables of common and hyperbolic logarithms, of reciprocals, squares, cubes, square roots, and cube roots; natural and logarithmic functions of angles; elliptic, Bessel, gamma, exponential, and hyperbolic functions; zonal surface harmonics and some other tables.

The table of logarithms of numbers is modelled on the ordinary four-figure log tables now so largely employed. It has the same number of rows of figures, the mean differences for each row being given, and it occupies only three pages. From it the five-figure log. of any three-figure number can be read directly. For a four-figure number the tabulated difference would require to be added, and for a five-figure number an additional difference for the last figure must be added. In the early part of the table the mean differences vary so quickly as to be of no use for five-figure accuracy, and, indeed, here the fourth figure is scarcely trustworthy. In such cases the author ingeniously recommends the use of the table of anti-logs, in which at the corresponding region the differences vary slowly.

The tables of trigonometrical functions each take up four pages. Five-figure values are given for intervals of $3'$ or $0^{\circ}.05$, and the mean differences for each row are given for $1'$ and $2'$.

Probably these five-figure tables of logarithms and functions of angles are not quite so convenient in use as the more lengthy five-figure tables provided with a thumb index. But occupying as they do only about one-tenth the space, the author has been able to include in a handy volume, at a moderate cost, tables of many transcendental functions which hitherto have not been very readily accessible, and they will be welcomed by the class of people for whom they are intended.

(6) Mr. Pickworth states that the object of his little book is to give a more detailed and practical explanation of the use of logarithms than is to be found in the text-books of algebra and trigonometry. The ordinary two-page tables of four-figure logarithms and anti-logarithms of numbers are given, and the detailed explanations are accompanied by exercises for practice, the answers to which are collected at the end. There is also a short table of the logarithms of some numbers which are of frequent occurrence in numerical work.

Students who are being taught practical mathematics at the present time, and who use a suitable modern text-book, will find in the latter all the information they need on the subject, without having recourse to a book like Mr. Pickworth's. The work seems specially adapted to meet the case of those who received their mathematical training at a time when logarithms were neglected or relegated to the higher branches, and who wish to be able to use this method of computation.

(7) In the preface the author of these tables expresses the opinion that the ordinary aids to arithmetical calculation, such as slide rules, tables of logarithms,

&c., are not adapted for general use. Thus he states that logarithms are only understood by very few, that they involve considerable trouble in searching the pages, and that they are seldom employed except for trigonometrical work. However true this may be of Germany, it is scarcely applicable to this country at the present time, where, thanks largely to the influence of South Kensington, logarithms are being taught to large numbers of youths in the classes for practical mathematics, and four figure log tables are in very general use throughout the kingdom.

The author's plan of meeting the common want of the computator is to supply a large multiplication table, which covers 200 pages and goes up to 100 times 1000. That is, the product of any two numbers one of which contains not more than three digits, and the other not more than two, can be taken directly from the table. Running along the bottom of the pages is a table giving, for three-figure numbers ranging from 0.1 to 99.9, the square and square root, cube and cube root, reciprocal, logarithm, and the products $\pi n/2$ and $\pi n^2/4$. On the last two pages are several useful subsidiary tables. In the introductory pages the uses of the tables are fully explained and illustrated with examples, worked out. It is shown how to deal with numbers of more than three digits, and how to perform division, square and cube root, &c. One advantage in the use of these tables is that the calculations are readily adapted to any degree of accuracy that may best suit the particular case under consideration, and contracted methods of working are explained by means of which all superfluous figures may be omitted.

The book should prove very useful for many purposes, such as in mercantile calculations, the evaluation of convergent series, the compilation of tables, &c. Every care has been taken by both author and printer to make the tables thoroughly trustworthy, and to facilitate reference. They are printed in clear bold type, and the general arrangement is very attractive.

RECENT ENTOMOLOGICAL WORKS.

Monograph of the Coccidæ of the British Isles. Vol. ii. By Robert Newstead. Pp. 270; pls. F., xxxv.-lxxv. (London: Ray Society, 1903.)

The Coccidæ of Ceylon. By E. Ernest Green, F.E.S. Parts i.-iii. Pp. xliii+249; pls. i.-xciii. (London: Dulau and Co., 1896, 1899, 1904.)

New Zealand Neuroptera; a Popular Introduction to the Life-histories and Habits of May-Flies, Dragon-Flies, Caddis-Flies, and Allied Insects inhabiting New Zealand, including Notes on their Relation to Angling. By G. V. Hudson, F.E.S. Pp. ix+102; with eleven coloured plates. (London: West, Newman and Co., 1904.) Price 10s. 6d.

ENGLISH entomologists and horticulturists are to be congratulated on the completion of Mr. Newstead's important work, which furnishes us, for the first time, with a satisfactory account of the British species of one of the most destructive families of insects, the Coccidæ or scale insects. They are peculiarly destructive to trees and greenhouse plants,

though by no means exclusively attached to them, and are consequently very liable to be carried from one country to another. But it is rather startling to read in the preface,

"The number of species found within the British Isles is eighty-eight, with four varieties; of this total, fifty-one species and two varieties have been found living under glass, and have undoubtedly been introduced from other countries. A few of these aliens have, apparently, existed in this country as plant pests for more than half a century; while others have been introduced within the last fifteen years, and with the exception of a few species, have apparently come to stay, and add to the difficulties of plant-culture."

The males are small delicate insects, and the females are apterous, and are sometimes ornamented with elegant laminated appendages of wax, as in the species of *Orthezia*, which are not uncommon on grass, nettles, and other low plants. It must not be forgotten that although the Coccidæ include such destructive insects as the American blight and the San José scale, other species furnish us with some of the most useful products obtained from insects, such as cochineal, lac, &c. It remains to add that Mr. Newstead has given us a very full account of the transformations, habits, &c., of each of our British species, and that the plates are excellent.

There are few more useful, and at the same time few more injurious, families of insects than the Coccidæ, and also few which have been so much neglected by entomologists until within the last ten or fifteen years, though latterly they have been so much studied by good observers in most parts of the world that our knowledge on the subject has advanced by leaps and bounds. Thus, in 1891, only seven species of Coccidæ were recorded from Ceylon, but Mr. Green took up the study immediately afterwards, and in November, 1894, he was already able to enumerate not seven, but seventy-two distinct species which he had observed up to that date. In the preface to the present work, dated September, 1896, he says:—

"This large number will be almost doubled in the present work, . . . and when other parts of the island have been properly explored, it is probable that considerably over two hundred species will be recognised."

It is needless to say that such estimates usually prove to be very much below the mark. The three parts of Mr. Green's book already published include ninety-one species, belonging to three subfamilies out of eleven (*Conchaspinæ*, *Diaspinæ*, and *Lecaniinæ*, of which last only the genus *Lecanium* is at present monographed), and nine genera, besides preface, glossary of terms, introductory and supplementary chapters on habits, classification, remedial measures, &c. We are not told how many more parts will be required to complete the work, and it is possible that Mr. Green himself cannot at present decide, for there will no doubt be large additions required to the earlier portions. He appears to have done his work very completely and thoroughly, and the illustrations are excellent. Respecting these, Mr. Green writes:—

"The lithographic plates, reproduced from my own drawings, have been most carefully printed in colours by P. W. M. Trap, of Leiden."

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We are pleased to see that Mr. Hudson is continuing his efforts to make the small, but highly interesting, insect fauna of New Zealand more widely known, and we hope he will continue to deal with other orders in succession. As in other groups of animals, the Neuroptera exhibit the usual characteristics of the fauna, a very small total number of species, a striking absence of most of the characteristic Australian groups, and the presence of a very few remarkable species peculiar to New Zealand. Among the latter we may mention the handsome dragon fly *Uropetala Carovei* (named by Adam White after the author of the "Story Without an End"), which superficially resembles our British *Cordulegaster annulatus*, Latr., but is larger.

Mr. Hudson describes the early stages of many of the species he notices, and figures several larvæ and pupæ in addition to the perfect insects. In an appendix he discusses the food of trout in New Zealand, founded on an examination of the contents (chiefly insects) of sixty trout stomachs. On the other hand, the larvæ of some of the larger Neuroptera may (like those of *Dytiscus* among the Coleoptera) be destructive to fish. Thus we read (p. 5), "The larva of *Stenoperla prasina*, Newm., might perhaps prove destructive to very young fish."

The Mallophaga and Psocidæ are not included in the present volume, and the Embiidæ and Panorpidæ are unrepresented in New Zealand. We have thought a comparison of the number of species of the families dealt with by Mr. Hudson, found in Britain and New Zealand respectively, might be interesting:—

Families	Britain	New Zealand
Termitidæ (White Ants)	0	3
Perlidæ (Stone Flies)	24	3
Odonata (Dragon Flies)	40	10
Epheméridæ (May Flies)	37	13
Sialidæ (Alder Flies)	2	1
Hemerobiidæ (Lace-winged Flies) ...	48	8
Phryganeidæ (Caddis Flies)	136	24

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DARWINISM AND THE STATE.

La Concurrence sociale et les Devoirs sociaux. By J. L. de Lanessan. Pp. 308. (Paris: Félix Alcan, 1904.) Price 6 francs.

M. DE LANESSAN has added yet another to the many books that undertake to show the working of Darwinian principles among civilised races, and this, like so many other books dealing with the same subject, shows no real knowledge of Darwinism. The author is strongly anti-Darwinian, and maintains that the struggle for existence leads to degeneration in the labouring class, which finds itself over-matched in the struggle against an aristocracy or a plutocracy.

At the outset some clear definition is needed. What is meant by degeneracy? Apparently our author means the under-development of the individual through defective nourishment and unhealthy conditions generally. This is, no doubt, a great evil, but it is not racial degeneracy. Would M. de Lanessan deny that the physical strength of civilised peoples is maintained by the large amount of elimination that still goes on? (In England nearly 50 per cent. of the population die before the average age of marriage,